Catalogue raisonné of 1845, indicated the number of Echinidæ discovered in the department of Sarthe at forty-one, and D'Orbigny in his Prodrome Stratigraphique at forty-four, the result of the joint labours of the authors, and other naturalists of the district, has raised the number to no less than two hundred and two. The discrimination, description, and illustration of the different species have been performed by M. Cotteau, whilst their stratigraphical arrangement and position have been accomplished by M. Triger. Some of the more remarkable forms discovered by them are the large *Heterocidaris trigeri*, with its peculiar arrangement of tubercles and its singular ambulacral pores, a species of which has recently been obtained by Mr. Wright from the inferior oolite of Yorkshire; the *Metaporhinus sarthacensis*, a curious and exceptional form representing in the Jurassic series the great family of *Spatangidæ*, which only make their appearance at the commencement of the cretaceous period; the *Echinocyphus tenui striatus*, which the authors are inclined to regard as the type of a new genus; the *Cidaris vendocinensis*, which presents such beauty of form and markings, with many others we have no space to particularise. The lithographic drawings are clearly drawn, and comprehend all the species discovered.

Progress of Chemistry. Jahresbericht über die Fortschritte der Chemie und verwandter Theile anderer Wissenschaften. Unter Mitwirkung von Th. Engelbach, Al. Naumann, W. Städel; herausgegeben von A. Strecker. Für 1868. 2$^{\text{tes}}$ Heft. (Williams and Norgate, 1870.)

THIS part, like the first, which we noticed a short time since, contains 480 pages; Organic Chemistry, continued from the first part, occupies 354, 13 of which are devoted to Animal Chemistry. Analysis fills 71 pages, the remainder being set apart for Technical Chemistry.

The section on Organic Chemistry contains accounts of Perkin's investigations on the hydrides of sodium and benzyl-salicyl, on butyric coumarin, and butyrocumaric acid, as well as Fittig's criticism of Perkin's views of the constitution of coumarin, which has since given rise to a lively discussion. Notices of Schützenberger's researches on triacetiodol, and of those of Perkin and Duppa on the constitution of glyoxylic acid are given. Stenhouse's experiments on benzol sulphuric acid are described, besides several papers by different chemists on the sulpho acids of the benzol series. Hofmann contributes, as usual, several valuable papers, the most important being those on the cyanide of naphthyl and its derivatives, and on the artificial mustard oils containing the radicals ethyl, methyl, amyl, tolyl, and benzyl, in the place of the allyl existing in the natural essence. The constitution of these compounds is also discussed. Gautier's researches on the carbylamines are continued, and also those of Lossen on hydroxylamine, which are noticed at considerable length. The action on organic bases is concluded by an account of Crum Brown and Fraser's experiments on the physiological effects of the compounds produced by the union of methylic iodide with the poisonous alkaloids.

Under Analysis we find the methods proposed by Frankland and Armstrong for the examination of potable waters, and which have since given rise to some controversy. Russell's apparatus for gas analysis is also described. The section on technical chemistry (only a portion of which appears in this part), contains papers by Rosenstiehl and Kopp, and by Schaffner on the preparation of sulphur from alkali waste, a subject of much importance, especially in this country, where the heaps of residues, which usually evolve sulphuretted hydrogen, and often pollute rivers in their neighbourhood, accumulate in immense quantities; this material, thanks to the study of scientific chemistry, may now be made to yield pure sulphur to such an extent as to make it worth the while of the manufacturer to extract it, while its removal renders the residues innocuous.

LETTERS TO THE EDITOR

[*The Editor does not hold himself responsible for opinions expressed by his Correspondents. No notice is taken of anonymous communications.*]

The Gulf-Stream

I SEND for the perusal of your readers an extract from a note sent to me by Mr. King Groom of Stornoway. The facts he mentioned may be interesting. The beans I have received. When I was in the Hebrides some time since, I was assured that clubs, paddles, and drinking vessels of wood were sometimes found on the shores of the islands, and that these things were supposed to float in the Gulf-Stream from Mexico, but I never saw any. Some of your readers will doubtless be able to say where these beans grow, and to give their opinion as to the probability of their floating from the Mexican Coast, or from some other tropical country or island whose shores are washed by the Gulf-Stream. If these beans are brought over by the Gulf-Stream, it is probable that they may also be found on the west coast of Ireland and on the coasts of Devon and Cornwall. If so it would be interesting to hear from your correspondents in those parts whether any particular virtue is attributed to them by the inhabitants.

Board of Trade, Aug. 25. THOMAS GRAY

"Upon travelling on the shore of Illery I found a, to me, curious bean, known as '*dolichos mens*,' or horse-eye bean. I was told that every year a few are found along the shores of the Outer Hebrides, and they are supposed to be carried by the Gulf-Stream from the Gulf of Mexico. These beans are much sought after, as they are superstitiously supposed by the South Uist and Barra people to be a charm in child-bearing; if at that time the woman has one in her hand she will have little pain in her labour. I was much interested in the story as told me by a Mr. Arbuckle, at Barra, the parish schoolmaster, and confirmed by Dr. M'Donald of North Uist. It is said the curious have a small band of silver wire placed round the bean that has travelled so far of itself, and a silver cross put on the side by a silversmith in the south. The inhabitants state they are sure the bean is brought to the shore of the Gulf-Stream from Mexico, as they have been thus found from time immemorial. Another bean is also brought by the same means—viz., 'Eig autea Mi: Mosa,' a large brown seed."

The British Medical Association

THE reference to the income and expenditure of the British Medical Association last week requires correction. The income of the association, from subscription, is not 5,000*l.* but 3,471*l.*; the subscription annually only one guinea. The association is one which includes an important political and social organisation. For the annual guinea the associates are enabled not only to supply themselves with a journal weekly, which stands on the same footing as those published at a higher price than their total annual subscription, but in addition they keep also an active and important organisation, with branches in every part of the kingdom, which protects medical and public interests and advances medical science. Many think with you that it would be desirable to make larger grants for special researches. But for this purpose it would be necessary to start a special fund. The annual mass of scientific matter published in the journal is treble what could be contained in any volume of Transactions, and has the advantage of being published at the opportune moments of discussion. You would confer a benefit by urging the propriety of a special fund for original research. But the members are so well pleased with the large return for their annual guinea, that their numbers have risen in four years from two to four thousand; and the weekly journal, which now takes the lead in periodical medical literature, is the essential condition of the political and professional authority of the association. To publish in its place an annual volume of Transactions would, it is universally felt, be a suicidal act of retrogression. Among the 4,000 members there are not a dozen who are not aware of this. X.

The Intended Engineering College

"Look not a gift horse in the mouth"

I WAS very sorry to see in NATURE for 18th August a letter from Mr. G. C. Foster complaining of a supposed intention of the Government to aid the teaching of science, and basing this complaint upon what appears to me most narrow and unreasonable grounds. The representatives of science have been tolerably unanimous in demanding of the Government further aid to science, and I think they should with equal unanimity protest against any such grumbling at a promised instalment before its nature and conditions are known.

Mr. Foster says "that it is fair to assume that Government," &c., &c., and then having stated the details of his assumption, proceeds to criticise it. I think (and surely shall not be alone in this opinion) that it is most unfair to assume anything of the kind as the basis of criticism. When the details of the Government scheme appear, will be the proper time to discuss them.

Being as ignorant of these details as Mr. Foster appears to be, I can say nothing about them, but must protest against the principle upon which Mr. Foster's complaint is based. It is this, that Government must initiate no scientific effort, give no special aid or patronage to any college or scientific institution, lest it should assail the vested interests of "institutions like University College and King's College in London, and Owens College in Manchester." According to this shopkeeping view of the interests of these institutions, they themselves should never have come into existence, and all endowments or other extraneous aids to new institutions must be regarded as attacks upon the vested interests of their more venerable competitors.

In the classic period when Munro Primus, Munro Secundus, and Munro Tertius occupied successively the anatomical chair of the University of Edinburgh, its medical school was the most flourishing in Great Britain; students journeyed from London and all parts of England to attend its classes. At about the culminating period of its rising fame the London University was founded, and among its most active promoters were Lord Brougham and other Scotchmen. According to Mr. Foster, these Scotchmen were traitors to their own University, for undoubtedly the medical schools of University College, King's College, and the provincial colleges affiliated to the London University, have, by the competition of their metropolitan *prestige*, patronage, endowments, and local facilities, seriously rivalled their northern predecessor; and if the University of Edinburgh were merely established for the purpose of providing class-fees for its professors, the Scotch promoters of the London University were traitors to their own *alma mater;* but if the objects of the Edinburgh University are the promotion of science and diffusion of general knowledge, then the founders of the London University were co-operating with the Edinburgh University, even though they thinned the attendance in some of its class-rooms.

The other institution whose vested interests Mr. Foster specially pleads to conserve, should rather be suppressed, if his principle were accepted, for by its rich endowment and *prestige*. Owens College competes unfairly with the less-favoured institutions of Manchester and the private science teachers there who have no share in its endowments. Mr. Oliver Mason is about to build and endow with princely munificence a great educational establishment in Birmingham, and has bought the ground within a stone's throw of the Birmingham and Midland Institute. If the council and friends of the Midland Institute accepted Mr. Foster's views, they would denounce Mr. Mason's project as the founding of an opposition shop, which, by its rich endowment, might undersell their own and take away their customers. If they regarded the existing institute as merely established and maintained for the purpose of providing certain professors with their present moderate salaries, for supporting a secretary and his assistant, and for the comfortable maintenance of the porter and his wife, they might consistently do so; but speaking from direct personal knowledge, I can affirm that, on the contrary, they of all others are the most rejoiced by Mr. Mason's munificence, because they are the most deeply interested in the intellectual progress of their town. I recommend Mr. Foster to imbibe some of their spirit, and to rest assured that no revolutionary disturbances are likely to result from excessive endowment or patronage of scientific institutions, either by the present or any other British Government of this generation. Even if Mr. Lowe's next financial surprise should consist in devoting a portion of the national surplus to the elevation of the national intellect, let generous acceptance accompany our amazement. W. MATTIEU WILLIAMS

Scientific Research

DURING the last century every branch of scientific research has undergone gigantic strides towards perfection. Great credit is due, ay, even in greater proportions than is given, to those talented minds, who, although on every hand impeded by obstacles, have successfully overcome every difficulty, and solved problems which excite the wonder and admiration of the universe. Within the limits in which I am compelled to restrain myself, it will not be necessary to pursue my idea with elaborate detail; but if I generalise with sufficient skill, abler hands can take up the thread and unwind it to the extremest minutiæ.

The means required for the prosecution of scientific research in a systematic manner, have never been at all adequate to the requirements. Various branches of science, such for example as astronomy, chemistry, &c., require an immense outlay in order to enable the philosopher to pursue his investigations with any prospects of a successful result. Others again, such as botany, geology, &c., require the devotion of long periods of time for the collection of specimens and their classification. Our societies certainly have, by their energy and emulative inducements, succeeded in extending scientific research far beyond the point which the most sanguine mind desired a century ago. But might not these societies be made much more useful; would it not be possible to distribute more widely their published transactions? Many gentlemen who take a great interest in scientific questions, but who do not live in London, are prevented from joining the societies by their exclusiveness. To them the valuable libraries, the periodical meetings, are useless, they therefore do not subscribe, and the high price of the publications prevents many from becoming purchasers. It seems to have become a settled opinion amongst scientific bodies, that everybody is able to spend 1*l*., or even more, just when he pleases, upon a luxury.

Unconnected with any society—not because of their own wish, but from their misfortune—hundreds of steadfast, able minds are working, adding, or being forestalled in, as the case may be, their mite here and there, in the onward march of progress. It is by unknown, frequently penniless searches after truth, that the great and complex problems have been solved. These great minds exist among us still. As examples, let me cite one or two instances, before suggesting an idea whereby we might hear more of such people. Whilst residing at Oxford, I became acquainted with a policeman, W. S., whose geological collection and information would have been worthy of one of our greatest and richest savants. A young gentleman, now a dissenting minister, and an undergraduate of that excellent institution, the London University, collected and classified some hundred species of the flora of his native county, Yorkshire. A third gentleman is assiduous in his botanical researches, and has, I believe, collected and classified the whole of the flora of another county. Now, it is such minds as these that, judiciously directed, make the greatest discoveries. Their only incentive to labour is a fixed inherent desire to know more of certain things; they have really no aim but the satisfying of the natural tendency to move in this direction. The published text-books upon various scientific subjects are not adapted for self-taught students, the authors presuppose the aid of a master. There is no meeting together to discuss what this or that one has done, but each laboriously pursues his own path, often wasting valuable time in going over ground already fully explored.

I would suggest that local societies in connection with the central bodies, be formed in *every* county. The nucleus to these bodies already exists in clergymen, doctors, solicitors, and above all, tutors and schoolmasters. There is a yearning amongst many of these men for more information, and, as previously stated, they are debarred from reaping any benefits from the central bodies as conducted at the present moment. The government of these branches should be somewhat similar to that of the older societies; each member ought to contribute an annual subscription, in return for which he would receive—

- α. Free admission to all meetings of the local and of the central society.
- β. The transactions of the society also free.
- γ. Any other benefits as the committee might determine, or which could be obtained.

Thus far the scheme I advocate is simple, but it may be said, this necessitates the formation of as many branches as there are societies. Not so, however; the country members within each district would be too few to allow of this; but they might *all* congregate under one roof, be subject to one government, and reap the advantages of communion. Every member might upon election signify the particular transactions he wished to obtain; his subscription, after deducting a certain per-centage for local expenses, could be sent to the society publishing them, and he should be enrolled upon its books as a *bonâ fide* member. The